lightspeed™

705iR

Portable Audio System

User Manual

CONGRATULATIONS!

Congratulations on your purchase of the 705iR Portable Infrared Audio System! Please take a moment to review this manual, as it will help you operate this easy-to-use system, and maximize your investment by caring for and maintaining each component.

The 705iR is a lightweight, multi-purpose, portable audio system powered by rechargeable batteries or AC power. It is designed to allow teachers to speak in normal conversational tones and yet be heard clearly by every student in the classroom.

The 705iR comes standard with the REDMIKE™ pendant-style classroom microphone. The system may be used with two microphones accommodating team teaching or student interaction. The second microphone can be an additional REDMIKE, LT-71 or the HM-70 handheld microphone.

SAFETY INSTRUCTIONS AND CERTIFICATIONS

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. **Read Instructions—**All safety and operation instructions should be read before this Lightspeed product is operated.

2. **Retain Instructions—**The safety and operating instructions should be kept for future reference.

3. **Heed Warnings—**All warnings on this Lightspeed product and in these instructions should be followed.

4. **Follow Instructions—**All operating and other instructions should be followed.

5. **Water and Moisture—**This Lightspeed product should not be used near water.

6. **Heat—**This Lightspeed product should be situated away from heat sources such as radiators, etc.

7. **Power Sources—**This Lightspeed product should be connected to a power supply only of the type described in the operation instructions or as marked on this Lightspeed product.

8. **Power Cord Protection—**Power supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them.

9. **Object and Liquid Entry—**Care should be taken so that objects do not fall onto and liquids are not spilled into the Lightspeed product.

10. **Damage Requiring Service—**This Lightspeed product should be serviced only by qualified service personnel. The user should not attempt to service this Lightspeed product.

11. **Prevent Electric Shock—**Do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.
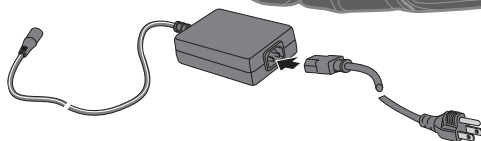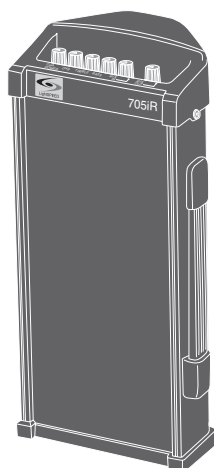
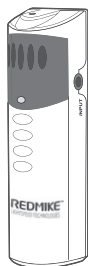# TABLE OF CONTENTS

705iR PORTABLE CLASSROOM AUDIO SYSTEM

SECTION 1

System Overview

SYSTEM COMPONENTS

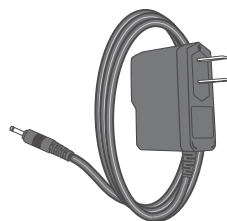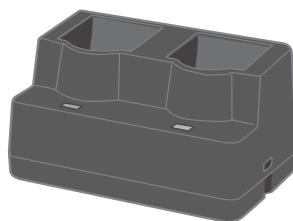**705iR Receiver/Amplifier,
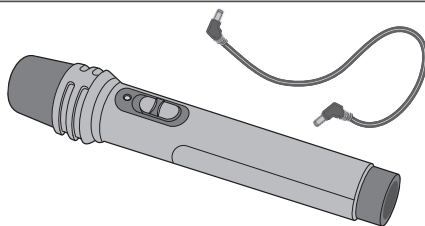Power Supply, and Carry Bag**

**REDMIKE Classroom
Microphone**

Charging Cradle and Power Supply
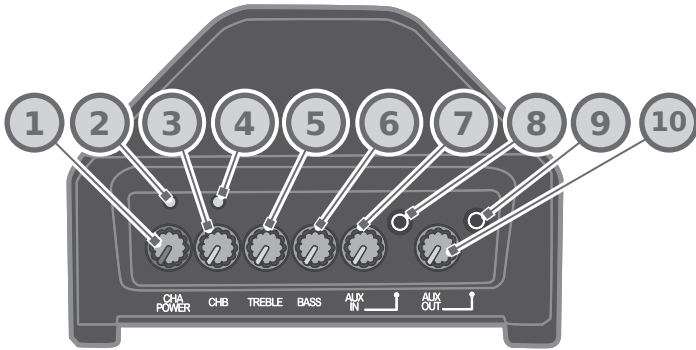
**Optional LT-71
LightMic and
Charger Cable**

**Optional HM-70 Handheld
Microphone and Charger Cable**

Helpful Hint

**Keep ALL packaging materials. If the system must be returned, using the
original packing material will be quick, convenient and prevent damage.**

705iR CONTROLS AND CONNECTIONS

Top Panel

1. **CH A POWER:** This knob turns on the power for the 705iR and controls the Channel A volume. We recommend using Channel A if you are using a single microphone for your system. Turn the knob clockwise to increase volume.

2. **The LED** light located above the CH A POWER knob turns red momentarily when the system power is turned ON.

   When a transmitter/microphone set to Channel A is turned on, the Channel A LED glows green to indicate your transmitter's signal is being received by the amplifier.

3. **CH B VOLUME:** This knob controls the volume for Channel B. You must first turn the 705iR ON with the CH A POWER knob, then turn the CH B VOLUME knob clock-wise to increase volume. Use Channel B when using a second microphone.

4. **The LED** above CH B VOLUME turns green to indicate a signal is being received from a microphone/transmitter set to Channel B.

5. **TREBLE:** This knob controls the high-frequency sound of the 705iR. Classroom Audio System.

6. **BASS:** This knob controls the low-frequency sound of the 705iR.

7. **AUX IN VOLUME:** This knob controls the volume level of an external audio source that is plugged into the AUX IN jack. An example would be a computer, iPod, or CD player.

8. **AUX INPUT JACK:** This 3.5 mm jack is used to connect to an external audio source.

9. **AUX OUTPUT JACK:** This 3.5 mm jack provides a line-level audio output that can be connected to a personal FM system or tape recorder.

10. **AUX OUT VOLUME:** This knob controls the audio level going to external equipment when plugged into the AUX OUT jack. For example, a personal FM transmitter or tape recorder.

705iR CONTROLS AND CONNECTIONS (cont'd)

Rear Panel

11. **TRANSMITTER CHARGING JACKS:** This connector is used to connect the charging cable to the optional LightMic transmitter or the optional HM-70 handheld microphone for daily battery recharging.

12. **EXTERNAL IR SENSOR JACK:** This jack is provided for connection of an additional sensor (for larger or odd-shaped rooms).
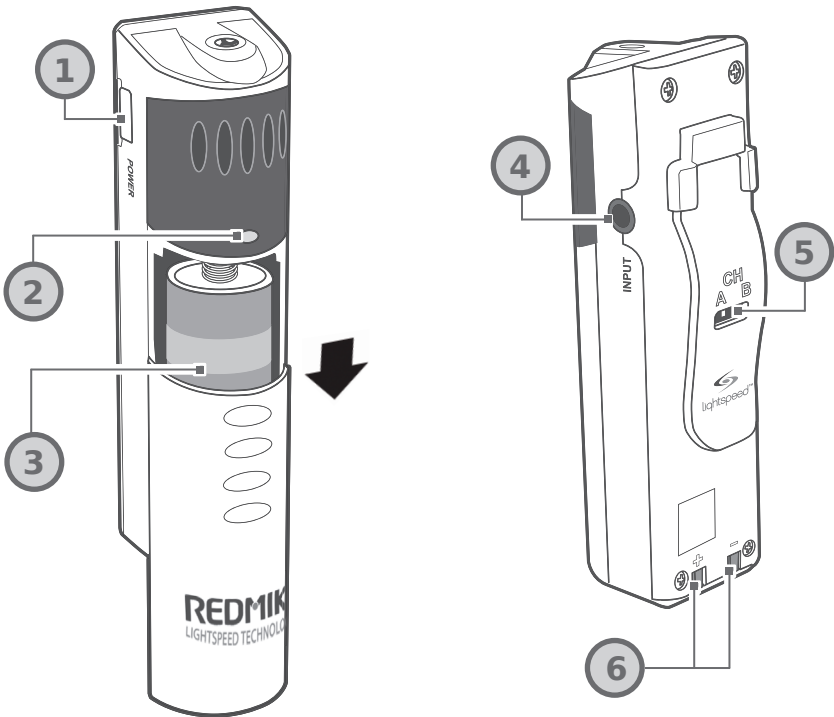
13. **CHARGING LED:** This LED glows red when the 705iR battery is charging and glows green when fully charged.

14. **DC POWER INPUT JACK:** This input connects to the 16 V AC/DC adaptor that comes with the 705iR. The adaptor is used to either charge the internal battery pack or power the 705iR with AC power.
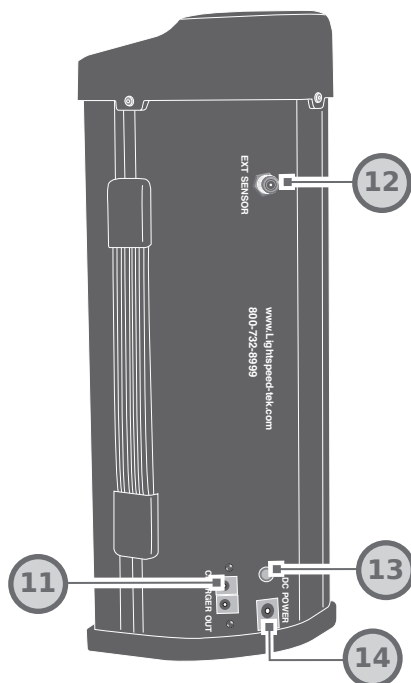
REDMIKE CONTROLS AND CONNECTIONS

1. **POWER BUTTON:** Press this button to turn the REDMIKE ON, press again to turn it OFF (mute).

2. **POWER/LOW BATTERY INDICATOR:** A BLUE light indicates the REDMIKE is on and fully charged. A RED light indicates a charge is needed.

3. **BATTERY COMPARTMENT:** To access the battery compartment, slide the door downward. The battery should only be replaced by a Lightspeed AA rechargeable sensing battery (part # BA-NH2A27).

4. **AUDIO/MICROPHONE INPUT:** Use this input to plug in a laptop, MP3 player or other audio source to wirelessly transmit audio to be played through the system. Alternatively, an external microphone can be connected.

5. **CHANNEL SELECT SWITCH (CH A/B):** This switch allows for selection between Channel A or B. If you are using a single microphone, we recommend using Channel A.

6. **CHARGER CONTACTS (+ -):** These contacts interface with the charging tabs in the BC-RMCC cradle charger for daily charging. Simply place the REDMIKE in the charger.
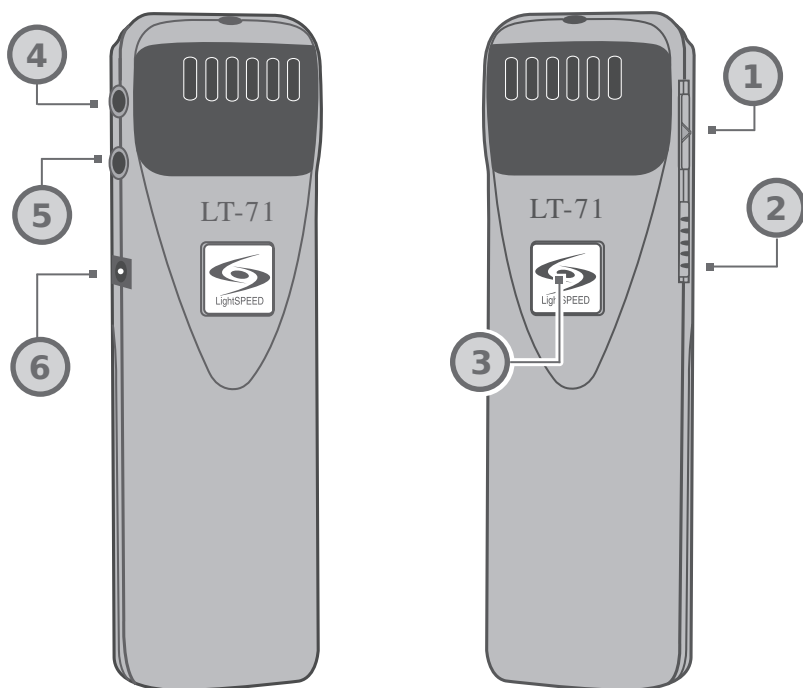
CRADLE CHARGER CONTROLS AND CONNECTIONS
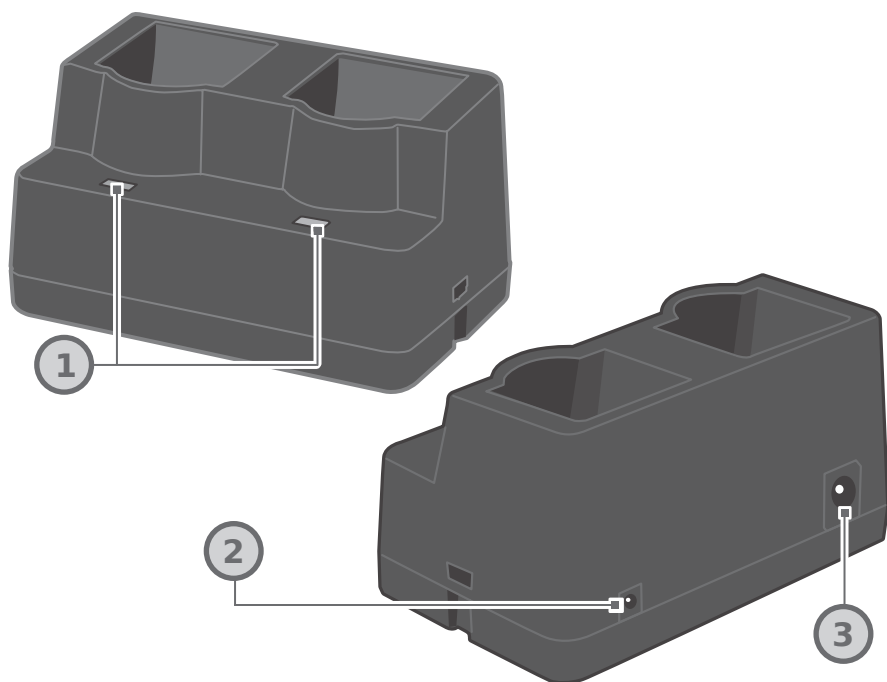
1. **CHARGE INDICATORS:** The light glows RED while the REDMIKE is charging. When fully charged, the light will glow GREEN.

2. **DC POWER PORT:** Connect the DC power cord here.

3. **OPTIONAL CHARGING PORT:** Plug the charging cord for the optional LT-71 or the HM-70 microphones here.

OPTIONAL LT-71 CONTROLS AND CONNECTIONS

1. **ON/OFF/MUTE Switch:** This switch turns LT-71 ON or OFF (mute).

2. **Channel Select Switch (CH A/B):** This switch allows for selection of Channel A or B. If you are using a single microphone, we recommend using Channel A.

3. **Power/Charge Indicator:** The light glows BLUE when the LT-71 is powered ON, RED when being charged.

4. **External Microphone Input (MIC):** Use the 3.5mm MIC jack for the optional TK-250 headset microphone (part# MC-TK250LTM).

5. **Auxiliary (AUX):** Plug a laptop, MP3 player or other audio source into this jack to wirelessly transmit the audio signal to be played through the system.

6. **Charger Input (CHARGER):** Plug the charging cable from the charger into this jack for daily charging. The LED on the front will glow RED to indicate charging.

OPTIONAL HM-70 CONTROLS AND CONNECTIONS
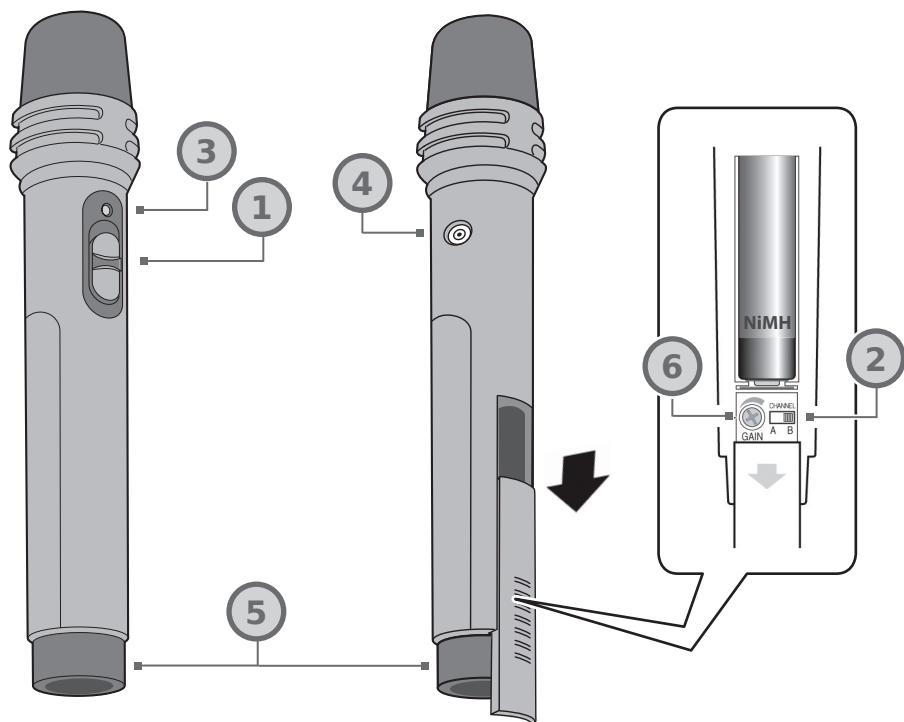
1. **ON/OFF/MUTE Switch:** This switch turns the unit ON, OFF or MUTE.

2. **Channel Select Switch (CH A/B):** Located in the battery compartment, the switch is set to Channel B at the factory.

3. **Power/Charge Indicator:** The light glows RED when the HM-70 is powered ON, GREEN when charging.

4. **Charger Input (CHARGER):** Plug the charging cable from the charger into this jack for daily charging.

5. **Infrared Emitters:** Avoid covering the emitters as you grip the HM-70 as this could interrupt signal transmission from the microphone.

6. **Volume Gain Adjustment:** Optimum volume level is pre-set at the factory and no adjustment should be necessary.

SECTION 2

Set-up

1. UNPACKING YOUR SYSTEM

Ensure that you have received all of the components of your system.
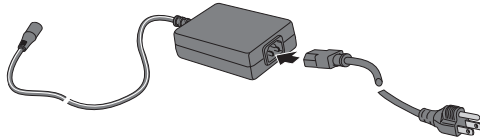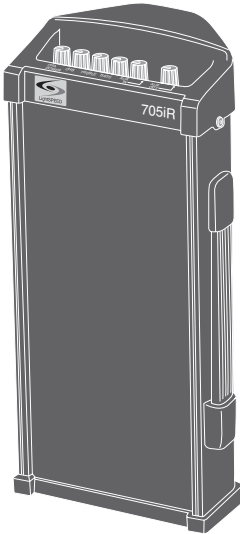
705iR Receiver/Amplifier, Power Supply, and Carry Bag

REDMIKE Classroom Microphone

Charging Cradle and Power Supply

Optional LT-71 LightMic and Charger Cable
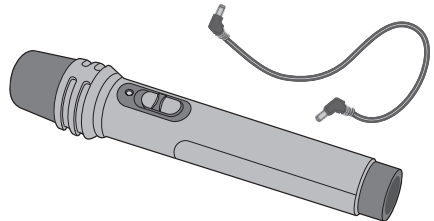
Optional HM-70 Handheld Microphone and Charger Cable

2. POSITIONING THE 705iR

The 705iR has a built-in speaker, which should be directed toward the area of the classroom where the students are sitting. The unit can be placed on a table top or bookshelf at a height of 36 to 60 inches.
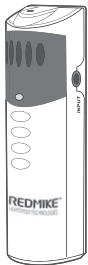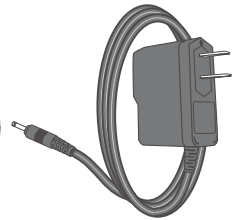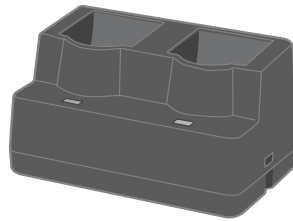
The ideal position in the classroom is centered along the longest wall. However, due to different classroom setups, this is not always possible. Here is a quick guide to choosing a location:

• **BEST:** Centered on the longest wall.

• **GOOD:** Centered on the short wall.

• **OKAY:** In a corner.

• **AVOID:** Placing the unit directly in front of a window.

Good placement

Okay placement

Best placement

Longest wall

Short wall
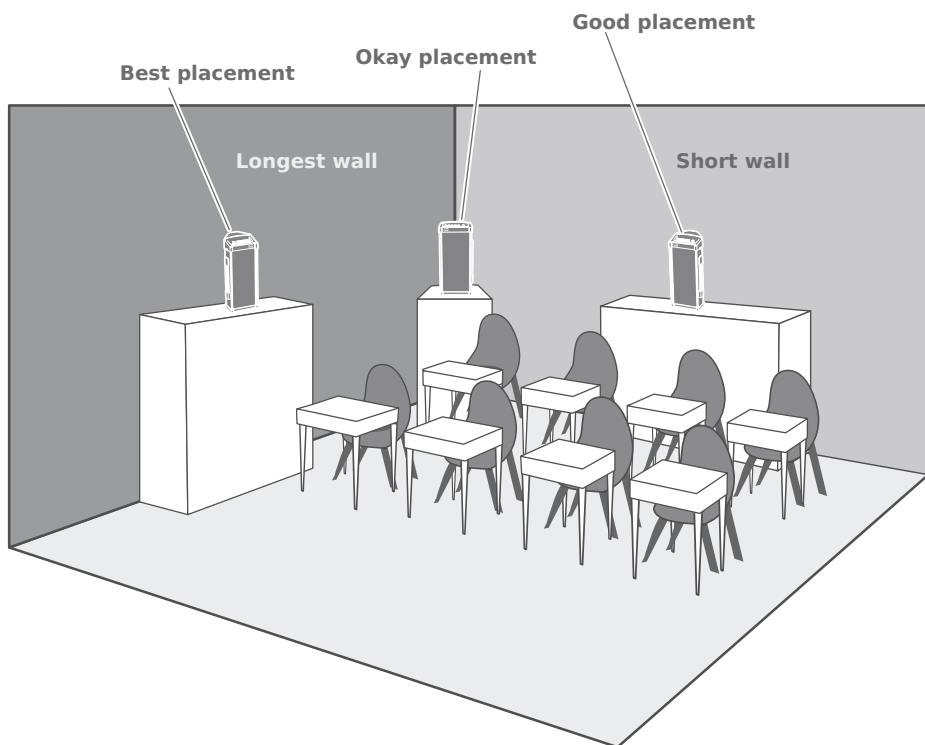
SECTION 3

Initial Set-up, Charging and Optional Features

INITIAL SET-UP: REDMIKE

1. Turn the 705iR power knob clockwise. The LED above the CH A POWER switch will flash RED one time to indicate the power is on.
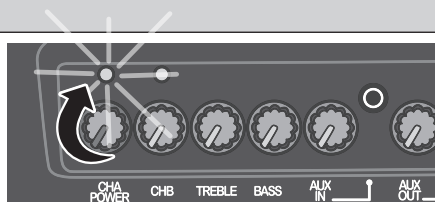
2. Turn on the REDMIKE. On the 705iR, the GREEN IR LED above the CH A POWER knob will light to indicate a signal is being received.
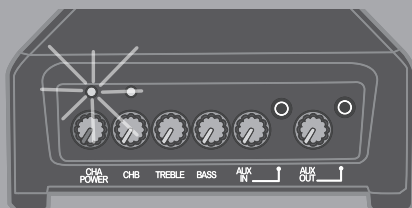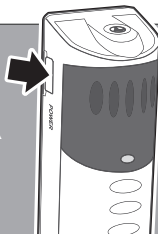
3. Slip the REDMIKE with lanyard around the neck and position the top of the microphone just below the collarbone. **NOTE:** Positioning of the REDMIKE is critical for proper volume adjustment.
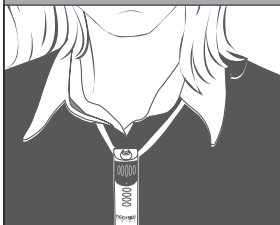
4. While speaking in a normal voice slowly increase the volume of the corresponding channel on the 705iR until your voice is barely audible. **REMEMBER:** This equipment supplements the user's voice so they are able to speak in a conversational tone. Having the volume set too high will result in feedback and listener fatigue.
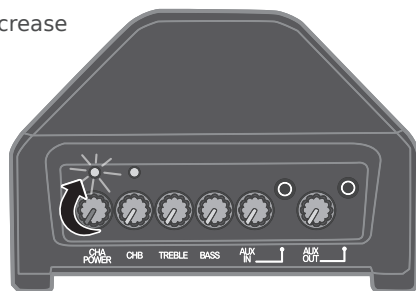
5. If a second REDMIKE was purchased, repeat steps 2-4. **NOTE:** Each REDMIKE has its Channel pre-set to either A or B. No further adjustment is necessary.
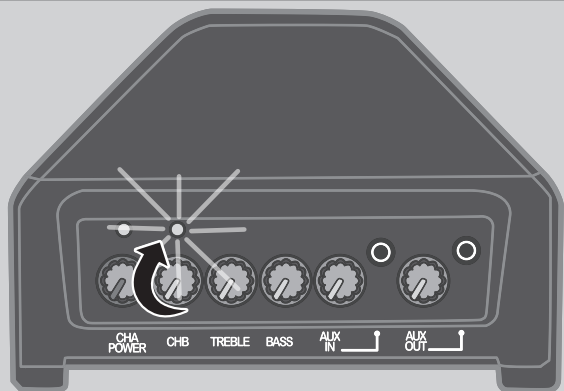
INITIAL SET-UP: OPTIONAL LT-71

1. Turn the 705iR power knob clockwise. The LED above the CH A POWER switch will flash RED one time to indicate the power is on.
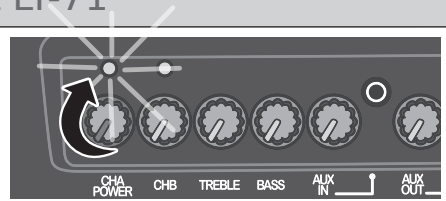
2. Turn on the LT-71 and set the channel to B. On the 705iR, the GREEN IR LED above the CH B knob will light to indicate a signal is being received.
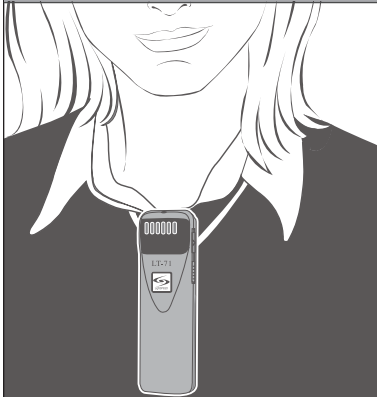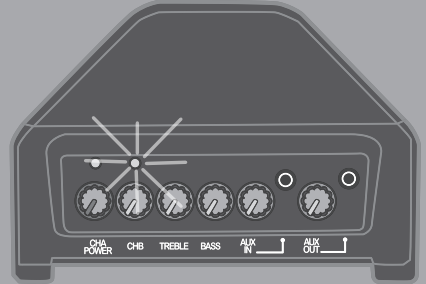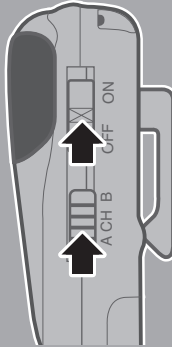
3. Slip the LT-71 with lanyard around the neck and position the top of the microphone just below the collarbone.
NOTE: Positioning of the LT-71 is critical for proper volume adjustment.

4. While speaking in a normal voice, increase the CH B volume level until your voice is barely audible. **REMEMBER:** This equipment is designed to supplement and distribute the user's voice so they are able to speak in a conversational tone. Having the volume set too high will result in feedback and listener fatigue.
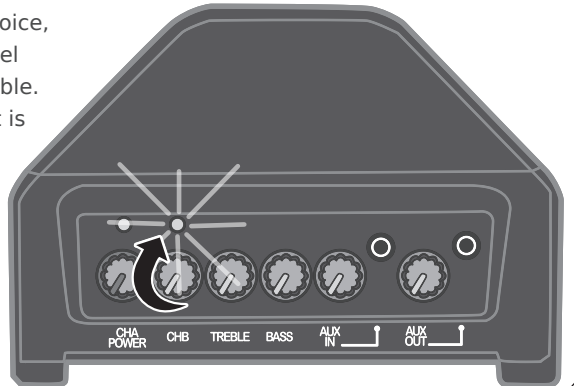
INITIAL SET-UP: OPTIONAL HM-70

1. **Turn** the 705iR power knob clockwise. The LED above the CH A POWER switch will flash RED one time to indicate the power is on.

2. **Turn** on the HM-70 by sliding the switch to the top position. On the 705iR, the GREEN IR LED above the CH B knob will light to indicate a signal is being received. The HM-70 is set to Channel B at the factory.
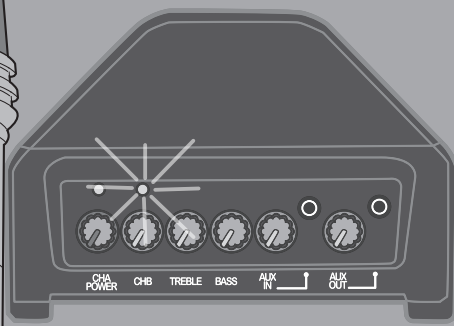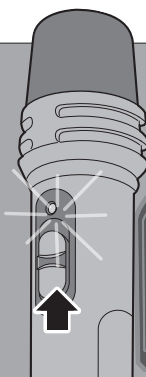
3. **Grip** the barrel in the center section. Avoid covering the infrared emitters circling the base. This could interrupt signal transmission.

4. **While** speaking in a normal voice, increase the CH B volume level until your voice is barely audible. **REMEMBER:** This equipment is designed to supplement and distribute the user's voice so they are able to speak in a conversational tone. Having the volume set too high will result in feedback and listener fatigue.
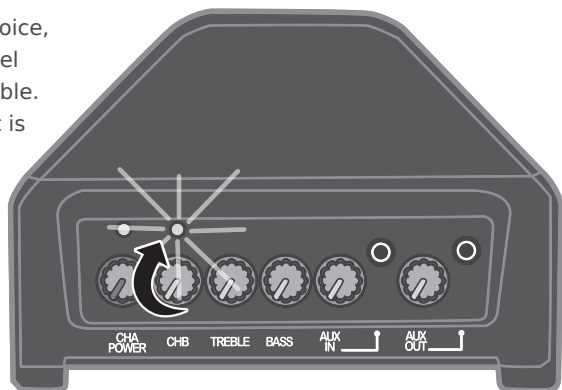
CHARGING THE 705iR

1. Ensure the power knob (CH A POWER) on top of the 705iR is turned off.

CHA POWER CHB TREBLE BASS AUX IN AUX OUT

2. Plug the power supply/charger cable into a standard AC outlet.
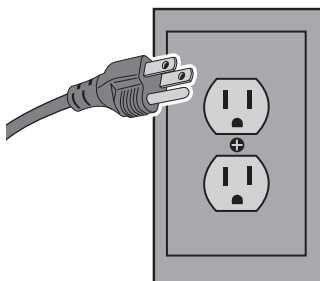
3. Plug the other end of the power supply/ charger into the DC power jack on the back of 705iR. The LED above the DC will glow RED. A solid GREEN LED indicates the 705iR is fully charged.

CHARGER OUT DC POWER
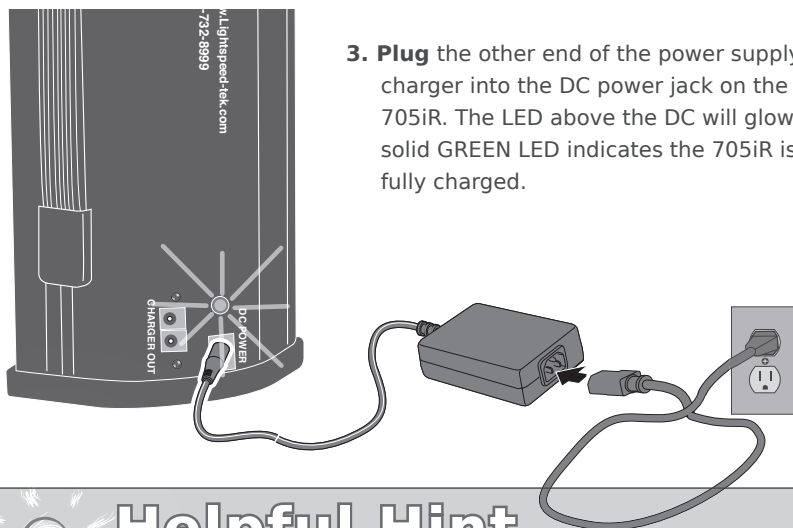
Helpful Hint

• Many users opt to only use the AC power. If this is the case it's not necesary to charge the battery.

• When fully charged, the circuit switches to a trickle charge, which will not overcharge or damage the batteries.

• A fully charged 705iR can operate under battery power for up to 6 hours.

CHARGING THE REDMIKE

1. **Plug** power cord into the cradle charger and then plug the AC end into an electrical outlet.
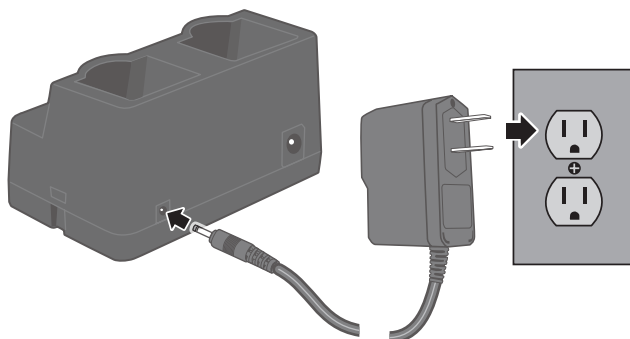
2. **Ensure** that the REDMIKE is turned OFF.
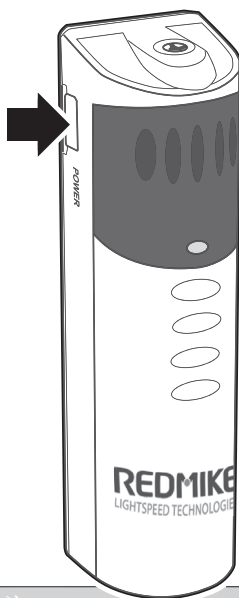
3. **Place** the REDMIKE into the cradle. The LED on the cradle will glow RED indicating charging has started. When the REDMIKE is fully charged the LED on the cradle charger will change to GREEN.
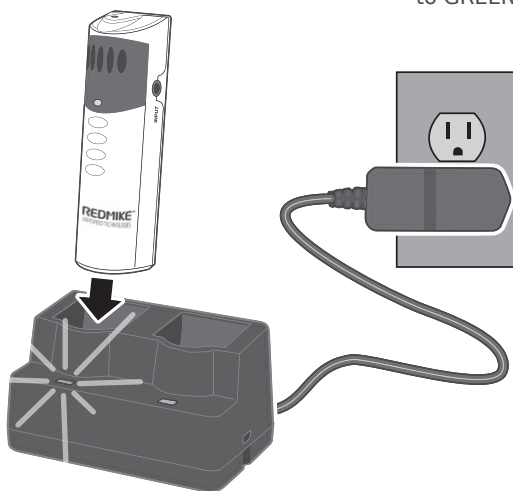
Helpful Hint

- REDMIKE incorporates alkaline protection into the microphone design. Replacement AA NiMH batteries may only be purchased through Lightspeed Technologies (part # BA-NH2A27).

- A blinking LED indicates a charging error. Be sure to use a Lightspeed rechargeable sensing battery.

CHARGING THE OPTIONAL LT-71

1. **Ensure** that the LT-71 is turned OFF.

2. **Make** sure the cradle charger is plugged into a wall outlet. Connect one end of the charging cable into the jack labeled CHARGER on the side of the LT-71 and plug the other end into the charging jack on the rear of the REDMIKE cradle charger. The LT-71's rechargeable batteries are factory installed. The LED on the front of the LT-71 will glow RED when charging.

3. **Leave** the LT-71 plugged in overnight (8–10 hrs.) to obtain a full charge.
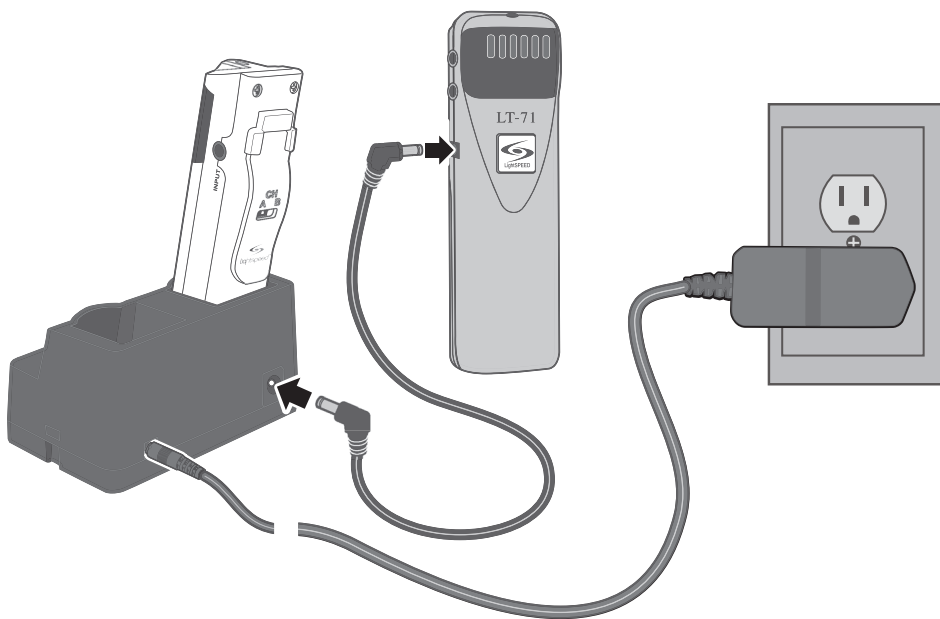
Helpful Hint

- Microphones can be left in the charger for up to two weeks without degradation to battery life.

- A full charge will be attained in 8-10 hours.

- Fully charged Lightspeed microphones will last over 7 hours.

CHARGING THE OPTIONAL HM-70

1. **Ensure** that the HM-70 is turned OFF**.**

2. **Make** sure the cradle charger is plugged into a wall outlet. Connect one end of the charging cable into the jack labeled CHARGER on the side of the HM-70 and plug the other end into the charging jack on the rear of the cradle charger. The HM-70's rechargeable batteries are factory installed. The LED on the front of the Handheld Mic will glow GREEN when charging.

3. **Leave** the HM-70 plugged in overnight (8–10 hrs.) to obtain a full charge. The GREEN light will turn off when fully charged.
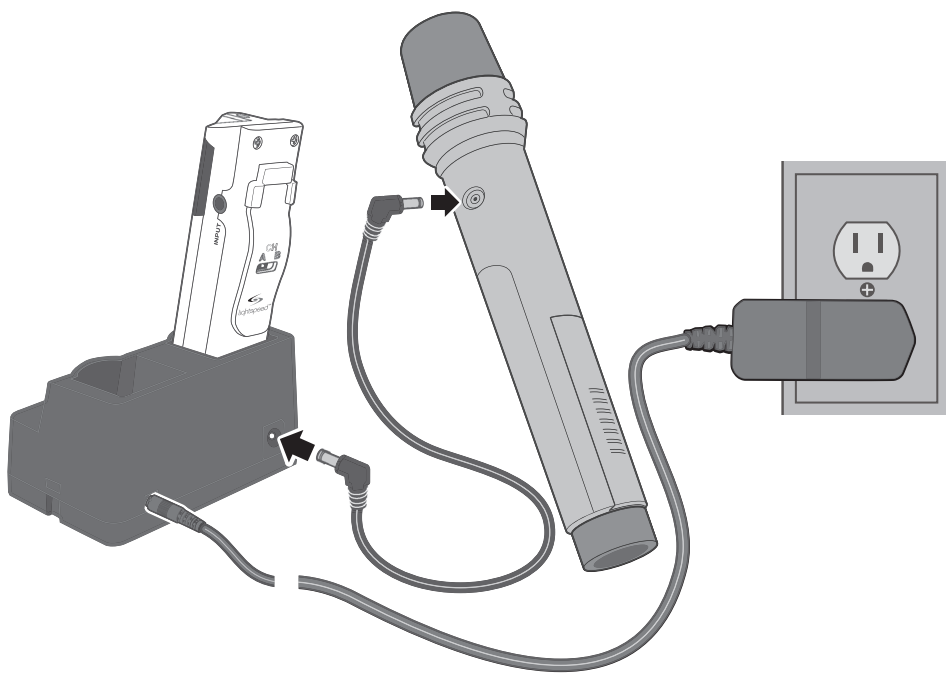
Helpful Hint

Do not attempt to charge alkaline batteries. They can overheat and expand, creating a significant hazard and damaging the LT-71 and HM-70. (This is not covered by the warranty.)

OUTPUT TO PERSONAL FM TRANSMITTER

1. **Using** a cable with a 3.5 mm connector at one end, connect the AUX OUT of the 705iR to the input jack of the FM transmitter. Different manufacturers use different size audio input jacks on the transmitter. The Lightspeed LES-370 requires the CA-MMC 3535 cable.

2. **Connect** a patch cable from the AUX OUT jack on the top of the 705iR to the FM transmitter's microphone or AUX input jack.

3. **Adjust** the volume control on the Personal FM receiver to maximum output. **NOTE!** This is to set the maximum allowable signal from the 705iR.

4. **With** the 705iR and FM transmitter turned on, speak into the microphone and slowly adjust the AUX OUT volume control until the appropriate audio level is achieved through the personal FM system.
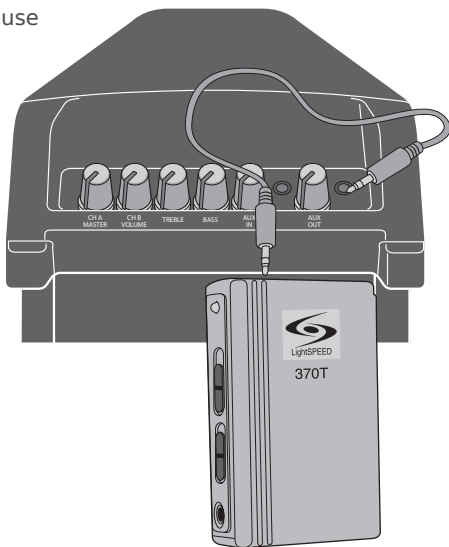
Helpful Hint

The optional LT-71 can also amplify external audio. Simply plug the 3.5mm patch cable from the audio source into the input labeled "AUX IN" and adjust the volume of the source to the desired sound level.
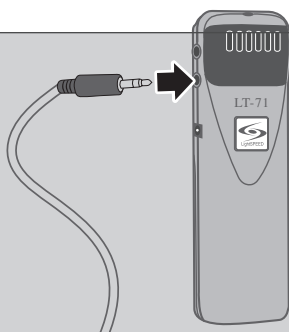
SECTION 4

Troubleshooting, Daily Use and Warranty

TROUBLESHOOTING GUIDE

Note: Most problems are directly related to low battery power. Please run through the "Battery Check" items first. For remaining troubleshooting, use known good, fully-charged batteries.

Battery Check

- **Confirm** batteries are charged each night.

- **Confirm** proper batteries are used. The REDMIKE requires the Lightspeed BA-NH2A27 rechargeable sensing battery for proper charging. The LT-71 & HM-70 require NiMH AA rechargeable batteries.

- **Make** sure the microphones are turned off while charging so a full charge is attained. Full charge will last eight hours.

- **Inspect** the battery contacts. Clean and adjust if necessary.

Hearing Static

- **Ensure** that no other REDMIKE/LT71/HM70 is operating on the same channel.

Low Volume or Feedback

- **Ensure** the pendant style microphone is positioned appropriately, just below the collar bone.

- **Check** volume level on the amplifier. If the volume is too high, feedback will occur. Adjust accordingly.

No Sound From Speaker

- **Turn** the 705iR on. Confirm that the POWER light flashes RED one time when turned on.

- **Confirm** signal is being received at the 705iR. The IR signal light will be GREEN indicating a signal is being received from the microphone.

- **Confirm** that REDMIKE is turned on. There will be a BLUE LED on the microphone to indicate it is powered on.

If you review these instructions and still have questions, write down the serial number and model number of your system and call Lightspeed Technical Services at 800.732.8999, 5 a.m. – 5 p.m., PST.

DAILY USE INSTRUCTIONS

1. TURN ON THE 705iR

Ensure the power is switched on. The RED LED will momentarily flash when turned on.

2. POSITION THE REDMIKE
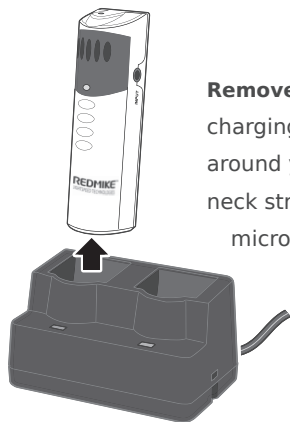
Remove the REDMIKE from the charging cradle and place it around your neck. Adjust the neck strap so the top of the microphone rests just below your collarbone.
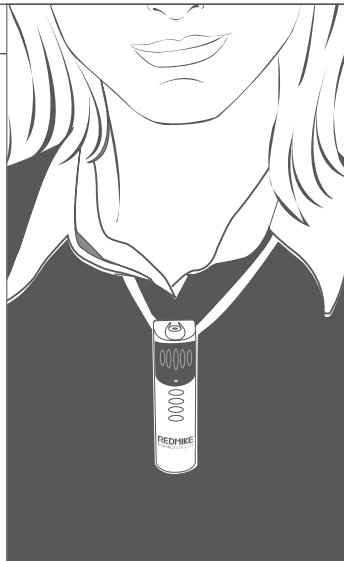
3. TURN ON THE REDMIKE

Turn the microphone ON using the ON/OFF switch on the side of the REDMIKE and speak normally.
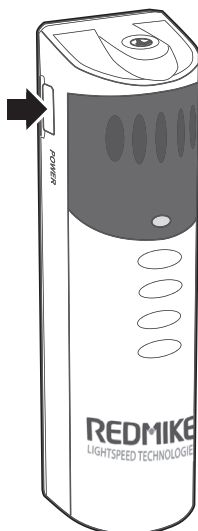
4. CHARGE BATTERIES

Place the REDMIKE back into the charging cradle to recharge at the end of the day.
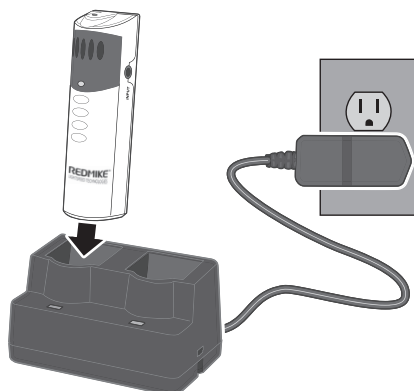
TIPS ON CLASSROOM AUDIO

1	**Speak** in a natural voice. A normal conversational speech level will provide an adequate signal. It is not necessary to increase the intensity of your voice—the audio system provides adequate amplification (approximately 5 – 10 dB) above ambient room noises.
2	**Avoid** wearing jewelry that may rub or bump against the microphone.
3	**Turn** the REDMIKE off during private conversations with a student, parent, or other classroom visitor. You can also cover the LED lens on top of the REDMIKE to block the signal.
4	**Recharge** batteries each night. When recharged nightly, operating time (actual usage) for the transmitters will last through a typical school day.

Five-year Limited Warranty

Lightspeed Classroom Audio Systems are guaranteed against malfunction due to defects in materials and workmanship for a period of FIVE (5) YEARS, beginning at the date of the purchase invoice. If such malfunction occurs, the product will be repaired or replaced (at Lightspeed's option) without charge during the warranty period.

1. Warranty on infrared microphones is FIVE (5) YEARS.

2. Warranty on Lightspeed rechargeable batteries, all external cables and wires provided by Lightspeed is one (1) year.

3. Prepaid shipping labels are provided by Lightspeed factory or an authorized warranty service center for warranty repairs.

4. Warranty does not extend to finish, appearance items, or malfunctions due to abuse or operation other than specified conditions, nor does it extend to incidental or consequential damages. Repair by other than Lightspeed or its authorized service agencies will void this guarantee. Information on authorized service agencies is available from Lightspeed Technologies, Inc.

Our Service Department (800.732.8999, 5 a.m. – 5 p.m., PST) will handle all your repair/replacement needs.

SYSTEM SPECIFICATIONS

OVERALL SPECIFICATIONS

Standard Carrier Frequencies (IR) .... 2.06/2.54 MHz
Alternative Carrier Frequencies (IR) .... 3.2/3.7 MHz
Frequency Stability .... ± 3%
Signal-to-Noise Ratio.. > 73 dB
Dynamic Range... > 73 dB
Frequency Response .... 100 Hz - 10 KHz

RECEIVER/AMPLIFIER SPECIFICATIONS

Receiver Type.. Superheterodyne
Receiver Sensitivity... 6 µV for 60 dB S/N
Image and Spurious Rejection............................. > 70 dB
Dimensions (W x D x H) .... 13.25" x 5.75" x 4"
Weight... 5 lbs. with battery pack
Total Harmonic Distortion................................... < 1% (Output = 1W)
Power Output .... 12W RMS
Speaker Type... Standard Cone 4"
Speaker Load Impedance.................................... 4 Ohms
Adjustable Tone Controls.................................... ± 8 dB (100 Hz - 10 KHz)
Power Supply (UL Listed) .... 16V/2.0 A
Battery Power (1-year warranty)......................... 12V NiMH Battery Pack

TRANSMITTER SPECIFICATIONS

REDMIKE
Audio Distortion .... < 1 %
Built-in Microphone .... Unidirectional Electret
Battery Power (1-year warranty)......................... 1 AA NiMH Rechargeable
Sensing Battery
Audio Input .... 3.5 mm
Dimensions (W x D x H) .... 0.9" x 1.0" x 3.5"
Weight... 2.1 oz.

LT-71 LightMic
Audio Distortion .... < 1 %
Built-in Microphone .... Unidirectional Electret
Battery Power (1-year warranty)......................... 2 AA NiMH Rechargeable
Audio Inputs.. Mic Level 3.5 mm
Line Level 3.5 mm
Dimensions (W x D x H) .... 1.375" x .75" x 4.625"
Weight... 3.7 oz.

HM-70 Handheld Microphone
Audio Distortion .... < 1 %
Built-in Microphone .... Unidirectional Electret
Battery Power (1-year warranty)......................... 2 AA NiMH Rechargeable
Dimensions (W x D x H) .... 2.25" x 2.25" x 8.75"
Weight... 7.36 oz.

INDIVIDUAL COMPONENTS & OPTIONAL ACCESSORIES

Part Number	Description
RX-705	Infrared receiver/amplifier/mixer with built-in charger
PS-16V-2.0	Power supply/battery charger for 705iR
RMT	REDMIKE classroom microphone with lavaliere cord and rechargeable AA battery
BA-NH2A27	Lightspeed AA rechargeable sensing battery (for REDMIKE)
AC-LTCB	Lavaliere cord for REDMIKE, LT-71
BC-RMCC	REDMIKE cradle charger
PS-5V-1.0	Cradle charger power supply
AC-SP705	705iR Carry Bag
Optional Accessories	
LT71	LightMic microphone with lavaliere cord, rechargeable batteries and charging cable
HM70	Handheld microphone with rechargeable batteries and charging cable
MC-TK250LTM	Noise-canceling headset microphone
AC-TCC7	Charging cable for LT-71 and HM-70 microphones
AC-TWBRK	Speaker Stand/Wall Mount Bracket
CA-MSC3535	3.5mm to 3.5mm stereo audio cable
CA-MMC2535	Audio patch cable (2.5 mm mono to 3.5 mm mono)

USER NOTES

Record your system serial numbers and purchase information. This is helpful when ordering additional components, accessories, and/or warranty service.

Components	Serial Number
705iR	
Microphones	
Charging Cradle	
Terms and Conditions	
Purchase Information	
Your School/Organization	
District	
Purchase Date	
Invoice	

USER NOTES

USER NOTES

AC-MN705

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lightspeed™